

CLAIMS

1. A resonator comprising one or more ring-shaped resonant elements, each resonant element including one or more conductor lines, each resonant element having a capacitive part and an inductive part, the capacitive part being formed by locating ends portions of conductor lines such that one end portion of a conductor line and the other end portion of the same conductor line closely adjoin each other in a width direction or such that one end portion of a conductor line and an end portion of another conductor line included in the same resonant element closely adjoin each other in a width direction.
- 5 2. A resonator according to claim 1, wherein each resonant element includes a plurality of conductor lines and a plurality of capacitive parts.
3. A resonator according to claim 1, wherein each conductor line is formed on a plane-shaped substrate.
4. A resonator according to claim 1, wherein each conductor line is formed around a side face of a substrate member in the form of a solid cylinder or a hollow cylinder.
5. A resonator according to claim 1, wherein end portions of a conductor line are located in close proximity to each other such that the end portions form an interdigital transducer.
6. A resonator according to claim 1, wherein, for some or all conductor lines, the width of conductor lines and the space between adjacent conductor lines are set to be equal to or smaller than the skin depth of the conductor lines.
7. A resonator according to claim 1, wherein the space between conductor lines adjoining each other in a width direction is set to be equal to or smaller than the skin dept of the conductor lines.

8. A resonator according to claim 1, wherein the space between conductor lines adjoining each other in a width direction is set to be substantially constant.

9. A resonator according to claim 1, wherein each conductor line is constructed in the form of a thin-film multilayer electrode obtained by alternately forming dielectric thin-film layers and conductive thin-film layer one on another.

10. A resonator according to claim 1, wherein the space between conductor lines adjoining each other in a width direction is filled with a dielectric material.

11. A filter including a resonator according to claim 1 and a signal input/output means coupled to the resonator.

12. A duplexer including a filter according to claim 11, the filter being used as a transmitting filter or a receiving filter or being used as both a transmitting filter and a receiving filter.

13. A communication apparatus including at least a filter according to claim 11 or a duplexer according to claim 12.